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LAND USE REPORT 1

LAND USE IN GREATER BOSTON IN 1960

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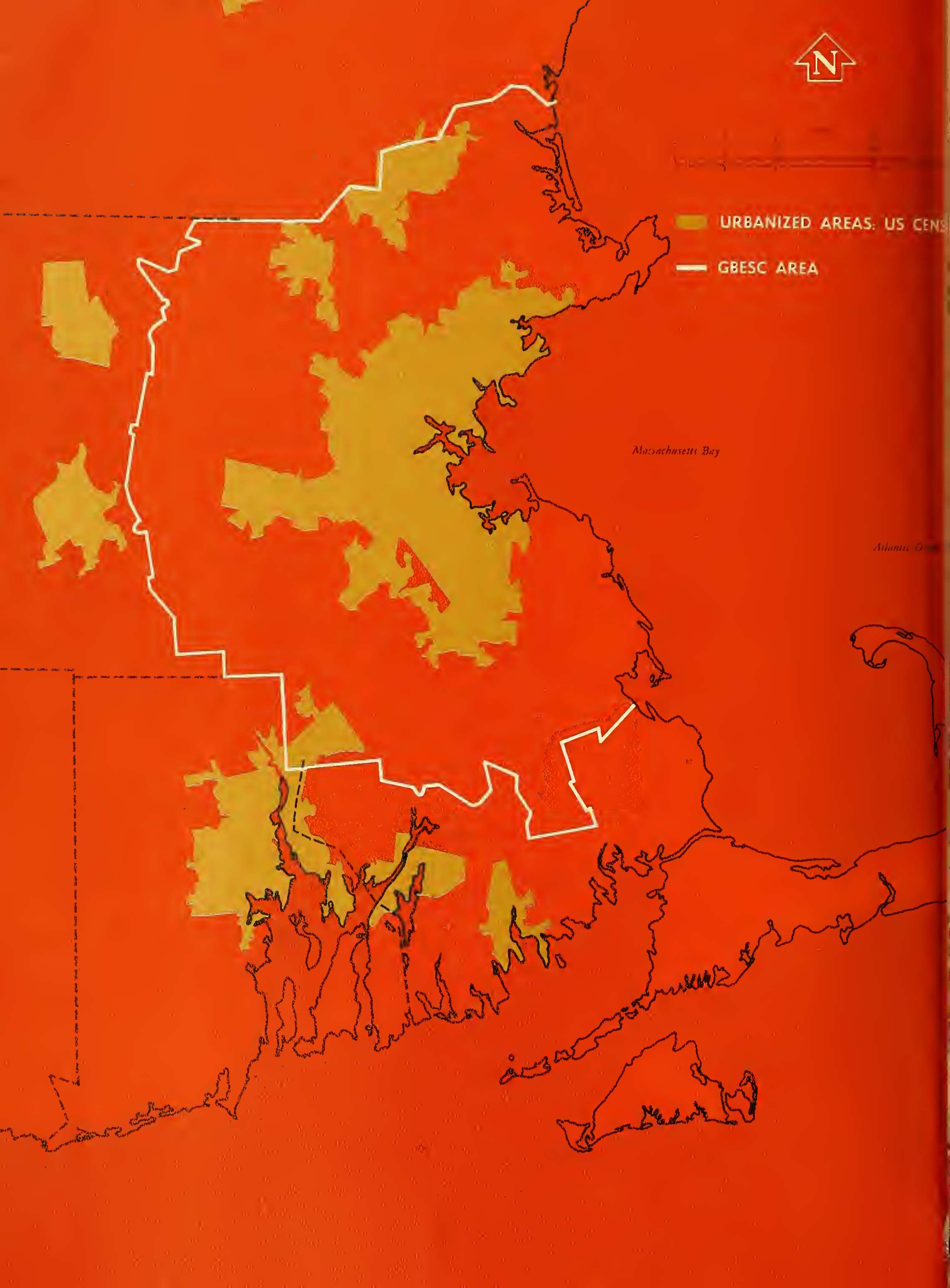
ASSOCIATE CENTER OF THE COMMITTEE FOR ECONOMIC DEVELOPMENT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land use in greater boston in 1960

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greater boston economic study committee
ASSOCIATE CENTER OF THE COMMITTEE FOR ECONOMIC DEVELOPMENT
200 BERKELEY STREET, BOSTON 17, MASSACHUSETTS, MAY, 1962

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GREATER BOSTON ECONOMIC STUDY COMMITTEE

The Greater Boston Economic Study Committee was founded in 1957. It is a private, nonprofit, nonpolitical research organization. The Study Committee has two basic objectives:

1. To increase public understanding of the economic forces and trends at work in Greater Boston by conducting and publishing objective and basic research on the region's economy.

2. To help the Greater Boston region achieve and sustain balanced economic growth by formulating policy recommendations which may both stimulate and advise leaders in metropolitan affairs.

The Committee presently has twenty members; seventeen are businessmen, one is a newspaper editor, and two are the deans of schools of business administration. The Study Committee has a small professional research staff and a Research Advisory Committee which helps guide its research program. The Research Advisory Committee is made up of leading business economists, university professors, and professionals in the field of planning and public administration.

In 1959 the Greater Boston Economic Study Committee became an Associate Center of the Committee for Economic Development. The Study Committee believes that this association has helped to broaden and strengthen its own program and organization.

To achieve its goals, the Committee issues public policy statements, economic base reports, and regional land use analyses.

In its policy statements, the Study Committee has made recommendations aimed at solving commuting problems in the metropolitan area, stimulating economic growth in downtown Boston, and financing local government in the decade ahead.

Its economic base studies analyzed population trends, the labor force, rapid transit ridership, business displacement in urban renewal areas, socio-economic patterns in growing suburban communities, and the participation of business executives in civic affairs in the Boston area

Land Use in Greater Boston in 1960 presents comprehensive data on land use for 153 cities and towns in the Greater Boston Area. The regional pattern these data imply is dramatically revealed by the full-color map which is also presented. The Greater Boston Economic Study Committee publishes these materials in the hope that they will stimulate the continuing analysis of land use in Greater Boston which will be needed if sound policies for guiding metropolitan growth are to be formulated.

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land use in greater boston in 1960

PREFACE

Land Use in Greater Boston in 1960 presents detailed land use data for 153 cities and towns in the Greater Boston region. The statistics are massive, so massive that the relationships they imply cannot be grasped by a study of them alone. The Greater Boston Economic Study Committee, therefore, includes in this report the first regional land use map of the Greater Boston Area. Together the data and the map provide the comprehensive land use information which is basic for the continuing analysis and solution of land use problems in Greater Boston.

Even as they were being compiled, the data were widely used by industrial and residential developers, businessmen in manufacturing and distribution enterprise, and the public and private agencies which provide transportation and utility services. Other uses were made by city and town planners and their consultants, redevelopment and housing authorities, transportation planners and engineers, conservationists, and many public and private agencies concerned with regional planning and economic development. The Study Committee's main objective in publishing these materials is to provide for this continuing and expanding need for land use information about Greater Boston.

The very process of accumulating and organizing the data raised a series of land use questions. How did the existing pattern of land use come about? What are the satisfactory and unsatisfactory elements in it? What are the likely and possible future uses of the land? Which among the possible alternative patterns of future growth is most desirable? And, within a democratic framework of control, how can the most desirable change in land use be brought about? These are among the more important questions, and some of them raise vital issues of public policy. Based on the data and the map presented here, the investigation and analysis of them can now be undertaken. The Greater Boston Economic Study Committee hopes that the publication of these materials will stimulate this research.

The statistical tabulations and the map are the culmination of

3 1/2 years of painstaking data-collecting and map-making, and this effort would not have been possible without the help of a great many public and private agencies and interested individuals. The Greater Boston Economic Study Committee gratefully acknowledges their assistance. The following is a list of those who have contributed.

The Commonwealth of Massachusetts

- Dept. of Commerce, Division of Planning
- Dept. of Natural Resources
- Dept. of Public Works
- Division of Fish and Game
- Mass Transportation Commission
- Metropolitan District Commission

Planning Consultants

- Adams, Howard and Greeley
- Alan Benjamin
- Atwood, Blackwood and Young
- Blair Associates
- Candeub, Fleissig and Associates
- Charles Downes and Associates
- Charles M. Zettek
- Charles W. Eliot II
- Dorothy Altman
- Economic Development Associates
- Edwards and Kelcey
- Hayden, Harding and Buchanan
- James Harris
- Kargman-Mitchell and Associates
- Nord Davis
- Rev. Herbert E. Stolts
- Shurcliff and Merrill
- Sonthoff and Thomas
- Technical Planning Associates
- The Planning Services Group

Planning Commissions

- Boston Planning Board
- Brookline Planning Board
- Cambridge Planning Board
- Framingham Planning Board
- Haverhill Planning Board
- Lawrence Planning Board
- Lowell Planning Board
- Malden Planning Board

Planning Commissions (continued)

- Medford Planning Board
- Millis Planning Board
- Sharon Planning Board
- Somerville Planning Board

Industrial Developers

- Cabot, Cabot and Forbes
- Cerel-Perini Corporation
- Nordblom and Associates
- R. M. Bradley

Other

- Audubon Society of Massachusetts
- Boy Scouts of America, Regional Council
- M.I.T., Dept. of City and Regional Planning
- Trustees of Reservations

Lastly, the Study Committee gives special recognition to the dedicated efforts of several members of its staff. The project was begun under the direction of Mr. John L. Culp, now in the Office of Development Coordinator for the City of Philadelphia. The planning and production of the land use map and the collecting of data from it was supervised by Mr. George M. Yost. Mr. Philip B. Herr supervised the data processing and prepared the final drafts of this report.

TABLE OF CONTENTS

Page

LAND USE IN GREATER BOSTON IN 1960

The Greater Boston Area 1

Land Use and the Regional Transportation System 3

Land Use in Greater Boston in 1960 3

Major Land Uses in Greater Boston Subareas 6

Intensity of Land Use 9

Residential Land Use 11

Commercial Land Use 15

Industrial Land Use 18

Institutional Land Use 20

Land Use By Public Utilities 22

Recreational Land Use 24

Open Land Resources 27

APPENDIX A. LAND USE DATA BY DETAILED LAND USE CATEGORIES FOR 153 CITIES AND TOWNS IN GREATER BOSTON 30

APPENDIX B. A COMPARISON OF LAND USE IN SELECTED METROPOLITAN AREAS 39

APPENDIX C. BIBLIOGRAPHY OF DATA SOURCES 40

LIST OF TABLES

Table No.		Page
I	AREAS AND PERCENTAGES OF MAJOR LAND USES WITHIN THE GREATER BOSTON AREA	5
II	AREAS AND PERCENTAGES OF MAJOR LAND USES BY SUBAREAS OF THE GREATER BOSTON REGION	7
III	SELECTED INDEXES OF INTENSITY OF LAND USE BY SUBREGION	9
IV	SELECTED STATISTICS ON RESIDENTIAL LAND USE IN GREATER BOSTON BY SUBREGION	12
V	SELECTED STATISTICS ON COMMERCIAL LAND USE IN GREATER BOSTON BY SUBREGION	16
VI	SELECTED STATISTICS ON INDUSTRIAL LAND USE IN GREATER BOSTON BY SUBREGION	19
VII	SELECTED STATISTICS ON INSTITUTIONAL LAND USE IN GREATER BOSTON BY SUBREGION	21
VIII	INSTITUTIONAL LAND USE BY TYPE	22
IX	SELECTED STATISTICS ON LAND USE BY PUBLIC UTILITIES IN GREATER BOSTON BY SUBREGION	23
X	LAND USE BY TYPE OF PUBLIC UTILITY	23
XI	SELECTED STATISTICS ON RECREATIONAL LAND IN GREATER BOSTON BY SUBREGION	25
XII	SELECTED STATISTICS ON THE ZONING OF VACANT AND AGRICULTURAL LAND IN GREATER BOSTON BY SUBREGION	28

LIST OF TABLES (continued)

Table No.		Page
XIII	LAND USE AND ZONING COMPARED IN GREATER BOSTON	29
XIV	LAND USE IN GREATER BOSTON, 1960	33
XV	A COMPARISON OF LAND USE IN SELECTED METROPOLITAN AREAS	39

LIST OF MAPS

Map No.		Page
1	THE CORE, INNER SUBURBS, OUTER SUBURBS, AND OUTER CITIES OF GREATER BOSTON	2
2	LAND USE IN GREATER BOSTON, 1960, IN BLACK AND WHITE	10
3	RESIDENTIAL LAND USE	13
4	COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL LAND USE	17
5	RECREATIONAL LAND USE	26
6	LAND USE IN GREATER BOSTON, 1960, IN FULL COLOR	back cover pocket (missing Nov. 2000)

land use in greater boston in 1960

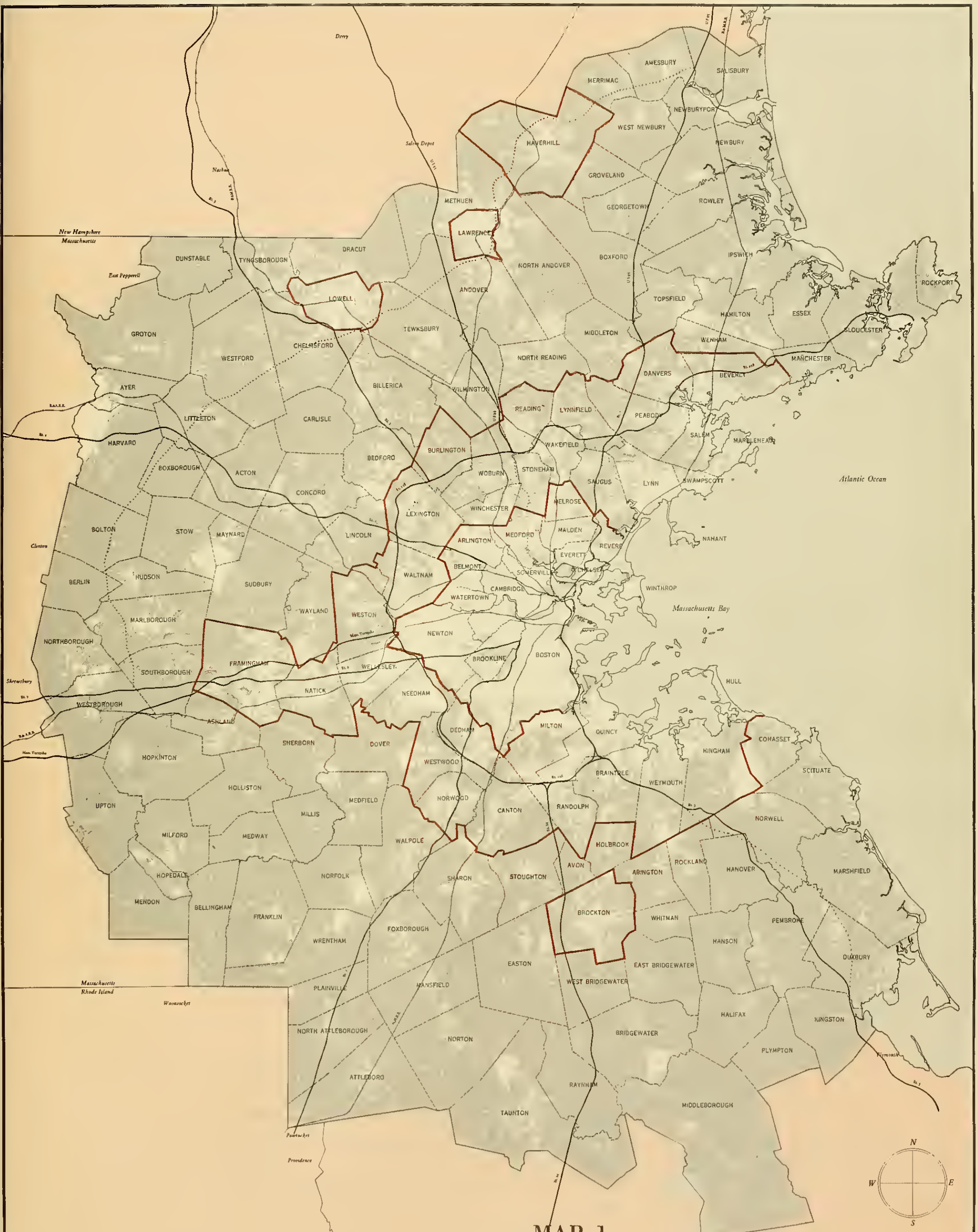
LAND USE IN GREATER BOSTON IN 1960

The Greater Boston Area

Land use classifies land according to the activity which takes place on it, and the purpose of this report is to review land use in Greater Boston in 1960. As defined here, the Study Area, which will also be described as Greater Boston or the Greater Boston Area, includes 153 contiguous cities and towns which fan out from downtown Boston to a radius of about 30 miles. This region does not correspond to any political unit or legal jurisdiction. Within its boundaries, it includes the Boston, Brockton, Lawrence, and Lowell Standard Metropolitan Areas as well as a number of communities not now assigned to any one of these Areas.

Obviously, it will not always be meaningful to describe land use for all 153 cities and towns as a group. Subregional breakdowns are clearly preferable even though subregions can never be satisfactorily defined. Nevertheless, for the purposes of this report, four subareas have been delineated, and these are shown on Maps 1 through 5. The Core consists of Boston and 14 other contiguous cities and towns. The Inner Suburbs include 34 communities which form a semicircle around the Core. In the region beyond the Inner Suburbs, there are four urban centers, Haverhill, Lawrence, Lowell, and Brockton, and these though not contiguous are taken together and are referred to as Outer Cities. In the remaining area there are 100 cities and towns; these are the Outer Suburbs.

In many of the tabulations data will also be presented for Downtown Boston, defined as the area bounded by Massachusetts Avenue, the Charles River, and the Fort Point Channel. Though this area is, of course, contained within the Core, it is of special interest from several points of view. Among other considerations, it is the focal center of the entire Greater Boston Area.



MAP 1

THE CORE, INNER SUBURBS, OUTER SUBURBS, AND OUTER CITIES OF GREATER BOSTON

Developed area in white, open land in gray, subarea boundaries in orange.

Land Use and the Regional Transportation System

The distribution of activities on the land is the basis of all travel, and conversely, land comes into use only when it can be reached by a transportation facility. Thus, it has long been recognized that there is a close interaction between the distribution of activities and the transportation system. For this reason, all of the illustrations in this report show the dominant elements in Greater Boston's transportation network. As of 1960 these were the circumferential expressway, Route 128, and a series of nine radial highways which fan out from the Core area. In addition, there are a series of rail lines which also radiate from Downtown Boston into the suburbs and beyond. However, the impact of these on the regional land use pattern is historical in contrast to that of the highway network which will play a vital role in the emerging distribution of activities.

It is important to note that one vital element, the Metropolitan Transit Authority's rapid transit system which serves the Core, is omitted from the illustrations. This is not to suggest that its impact on land use is unimportant. Indeed, without it, no concentration of activities of the kind which has developed in the Core could ever have come about. Its omission from the illustrations is due to the fact that the techniques used in the preparation of the full-color land use map, from which Maps 1 through 5 are derived, did not permit street layouts to be shown, and the MTA system follows these.

No transportation facility either completed or announced after 1960 is included. In this way land use as of 1960 is described only in relation to transportation in 1960.

Land Use in Greater Boston in 1960

In the main text of this report, only eight general land use categories -- residential, commercial, industrial, public utilities, institutions, recreation, land management, and vacant and agricultural land --

will be described. The first six of these make up the so-called developed area. Land devoted to an agricultural use or which is vacant or is administered under some form of land management is defined as open land. Appendix A defines the subclasses of these eight broad land use categories and presents acreage tabulations at this more detailed level.

It should also be understood that the data presented here were tabulated from the land use map. The procedure was as follows: First, all land use maps which had been recently prepared for cities and towns in the Study Area were collected. Where no maps were available, field surveys were undertaken. The information from both sources was then transcribed onto United States Geological Survey Maps, and all information was thus transferred to a common base. Once this base map, which stands some 15 feet square, was completed, acreage tabulations were taken directly from it by means of overlaying a transparent grid and counting acres in each use for each of the 153 cities and towns.

The full-color map Land Use in Greater Boston, 1960 was then produced by photographically reducing the original and printing from the reduced version. No attempt was made to generalize. Indeed, an effort was made to present as much detail as could be effectively shown at the scale of the full-color map included in this report.

It is important to note that no separate category has been established for land used to accommodate expressways, streets, and alleys. In this report land devoted to such uses is included in the categories adjacent to the transportation facility itself.[1] This is a common practise even though it is well known that the transportation uses account for a large percentage of total land used. The Pittsburgh and Chicago Area Transportation Studies, for example, found that streets and alleys were the second largest users of urban land and accounted for 25% of the total.

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1. As described in Appendix A, the tabulations for transportation listed under public utilities report only acreages used for airports, railroads, and interchanges.

Both studies also found that the distribution of streets and alleys followed the distribution of other land uses closely, which is in effect to restate the axiom that where there is development, there must also be a transportation facility.

The procedures of map preparation and acreage tabulating employed did not permit the counting of acreages for expressways, streets, and alleys on a town-by-town basis. But if the data are interpreted with due regard to this qualification, the omission of an expressways, streets, and alleys category is not a serious one.

TABLE I. AREAS AND PERCENTAGES OF MAJOR LAND USES WITHIN THE GREATER BOSTON AREA

Land Use	Thousands of Acres (1)	Per Cent Developed Area (2)	Per Cent Total Area (3)
Residential	270.3	59.6%	17.4%
Commercial	15.3	3.4	1.0
Industrial	18.7	4.1	1.2
Public Utilities	18.9	4.2	1.2
Institutional	60.3	13.3	3.9
Recreational	70.4	15.5	4.5
Total Developed Area	453.9	100.0%	29.2%
Land Management	21.9		1.4
Vacant and Agricultural	1079.2		69.4
Total Open Area	1101.1		70.8
Total Greater Boston	1555.0		100.0%

One final observation which must be made about the data relates to their dating as 1960. The work of compiling and transcribing from

individual city and town maps was begun before 1960, and some of the information, therefore, describes earlier years. In only a few cases, however, did the material go back as far as 1955, and in some cases field surveys were used to update it. Other information compiled through field surveys was gathered in 1961. But as the data and the map describe the results of several centuries of development, it must be obvious that the percentage error on account of this dating problem is small. Such errors as may have been introduced on this account will be mainly in the information presented for the more rapidly growing suburban communities.

As shown in Table I only 30% of the study area has been developed, and in Maps 1, 3, 4, and 5, the developed area is shown in white, the open in gray. Residential uses account for the largest share, almost 60%, of all developed land. Recreational uses account for 15 1/2%, and institutional for over 13%. Public utilities, industrial, and commercial activity together account for the remaining 12%.

Vacant and agricultural land account for virtually all of the open area. Open land under some form of land management accounts for only some 2% of all open space.

Major Land Uses in Greater Boston Subareas

The acreage tabulations in Table II and the orange demarkation lines on Maps 1 through 5 show that the subareas vary greatly in size. The Outer Suburbs contain over 75% of all land in the Study Area; the Inner Suburbs just over 16%; the Core Cities just over 5%; and the Outer Cities about 3%. Absolute acreages cannot, therefore, be used for subregional comparisons.

The per cent distributions of major land use categories show that the greatest difference among the subareas is in the proportion of developed to open land. The very names assigned to the subareas imply the relationships. In the Core Cities over 90% of the land is developed;

TABLE II. AREAS AND PERCENTAGES OF MAJOR LAND USES BY SUBAREAS OF THE GREATER BOSTON REGION

A. Area in Thousands of Acres

Land Use	Down-town Boston (1)	15 Core Cities* (2)	34 Inner Suburbs (3)	4 Outer Cities (4)	100 Outer Suburbs (5)	Total Study Area (6)
Residential	0.37	41.72	83.37	14.34	130.86	270.30
Commercial	0.45	4.82	4.52	0.80	5.19	15.32
Industrial	0.33	6.06	5.60	1.33	5.68	18.67
Public Utilities	0.19	2.94	6.09	1.20	8.66	18.89
Institutions	0.18	8.59	14.44	1.74	35.52	60.29
Recreation	0.15	9.45	22.81	2.69	35.47	70.42
Total Developed Area	1.67	73.58	136.83	22.10	221.38	453.89
Land Management	-	0.73	1.81	0.08	19.29	21.91
Vacant and Agricultural	0.09	6.54	116.02	25.23	931.36	1079.15
Total Land	1.76	80.85	254.66	47.41	1172.03	1554.95

B. Per Cent Distribution of Total Developed Areas

Land Use	Down-town Boston (1)	15 Core Cities* (2)	34 Inner Suburbs (3)	4 Outer Cities (4)	100 Outer Suburbs (5)	Total Study Area (6)
Residential	22.2	56.7	60.9	64.9	59.1	59.6
Commercial	26.9	6.5	3.3	3.6	2.3	3.4
Industrial	19.8	8.2	4.1	6.0	2.6	4.1
Public Utilities	11.4	4.0	4.4	5.4	3.9	4.2
Institutions	10.8	11.7	10.6	7.9	16.0	13.3
Recreation	9.0	12.8	16.7	12.2	16.0	15.5
Total Developed Area	100.0	100.0	100.0	100.0	100.0	100.0
Developed Area as a Per Cent of Total Area	94.9	91.0	53.7	46.6	18.9	29.9

* Including Downtown Boston

in the Inner Suburbs 54%; in the Outer Cities 47%; and in the Outer Suburbs about 20%. The finding that the Outer Cities as a group are slightly less developed than the Inner Suburbs may appear as something of an anomaly as these centers are nuclei of historic and concentrated development within the Greater Boston region. This finding, however, reflects on the one hand the fact that the political boundary of one of these cities, Haverhill, extends well beyond its developed nucleus, and on the other, the fact that in the Inner Suburbs great quantities of land are developed for residential purposes at relatively low densities.

The per cent distributions in Table II B reveal differences in the land use structure of the developed areas in the Greater Boston subregions. The Core Cities, for example, have the smallest proportion of residential uses, 56.7%, but the greatest proportion of commercial and industrial, 6.5% and 8.2%, respectively. The Inner Suburbs exceed the regional average in residential, recreational, and public utility uses. The Outer Cities exceed the regional average in four categories, residential, commercial, industrial, and public utilities, but are relatively low in the institutional and recreational categories. The Outer Suburbs, on the other hand, have a proportion of residential uses which is just below the regional average but a higher proportion in the recreational and institutional categories. As would be expected, their shares of commercial, industrial, and public utility uses are lower than the regional average by a greater margin than is to be found in any other of the four main subregions. The per cent distribution of land uses in Downtown Boston differs markedly from that of all other subareas.

These differences among the subregions in their structure of land use reflect different proportions of social and economic activities, ,and the extreme deviation of the Downtown Boston pattern from the regional average is directly related to its unique and traditional position as the focal center of the Greater Boston Area. These subregional differences will be examined further in the discussion of individual land use categories below.

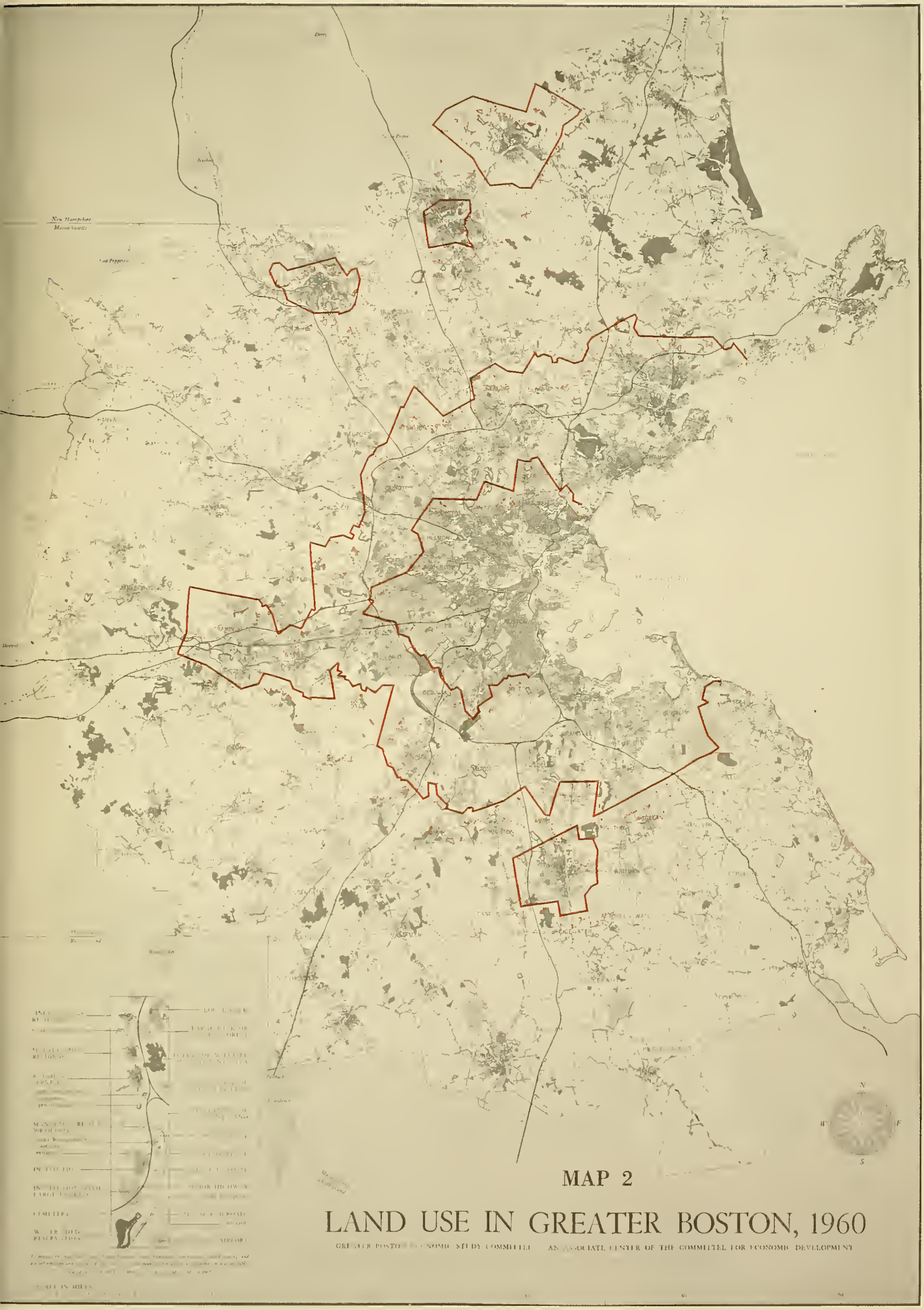
Intensity of Land Use

By definition land is used less intensively on the periphery of urban areas than it is at the center. Statistically, however, this is a difficult phenomenon to measure as no one index can adequately define intensity of use when the activities being measured include the entire range of social and economic life.

Map 2 is a black and white photographic reduction of the full-color land use map, and differences in intensity can be inferred from it. In the full-color map the stronger colors are used to portray manufacturing, wholesaling, retailing, and multi-family residential uses. These show up in the darker tones in the black and white reduction. As a result, they give a visual impression which corresponds to the picture revealed by the set of statistical measures presented in Table III.

TABLE III. SELECTED INDEXES OF INTENSITY OF LAND USE BY SUBREGION

Index	15 Core Cities (1)	34 Inner Suburbs (2)	4 Outer Cities (3)	100 Outer Suburbs (4)	Total Study Area (5)
Developed Land as a % of Total Land	91	54	47	19	30
Persons Per Developed Acre	19.5	6.8	12.8	3.6	7.6
Persons Per Residential Acre	35	11	20	6	13
$1000 of Retail Sales per Commercial Acre	463	236	497	126	284
Industrial Employment Per Acre	37	23	40	19	27
Hospital Patients Per Acre	17	6	20	3	5
College and Private School Students per Acre	46	5	20	2	12



MAP 2

LAND USE IN GREATER BOSTON, 1960

GREATER BOSTON ECONOMIC STUDY COMMITTEE AN ASSOCIATE CENTER OF THE COMMITTEE FOR ECONOMIC DEVELOPMENT

Because the land use categories and the other factors used in calculating the indexes in Table III are not exactly comparable, the indexes should be understood as approximations only. Nevertheless, they are helpful, and a consistent and reasonable pattern emerges from them.

By all measures, the Core Cities use land much more intensively than does the Study Area as a whole. The Outer Cities which are also historic nuclei of social and economic activity also exceed the regional average but in most cases by a smaller amount than do the Core Cities. The Inner Suburbs exceed the regional averages only in hospital patients per acre and in the per cent of total land developed while the Outer Suburbs by every measure show the lowest intensity of land use.

Residential Land Use

The largest single land requirement in Greater Boston is for residential purposes. Over 270,000 acres, about 60% of all developed land, are devoted to this use. Of this residential land almost half is located in the Outer Suburbs, 30% is in the Inner Suburbs while the Core and Outer Cities together account for the remaining 20%.

This distribution among the subareas does not correlate neatly with the per cent distribution of the Area's population. Indeed, if anything, there tends to be an inverse relationship. The Core Cities, for example, have about 40% of the population but only 15% of the residential land. The Outer Suburbs, on the other hand, which account for half of the residential land, have less than one quarter of the population. As shown in Table IV, the disparity is not quite so great for the inner suburban communities.

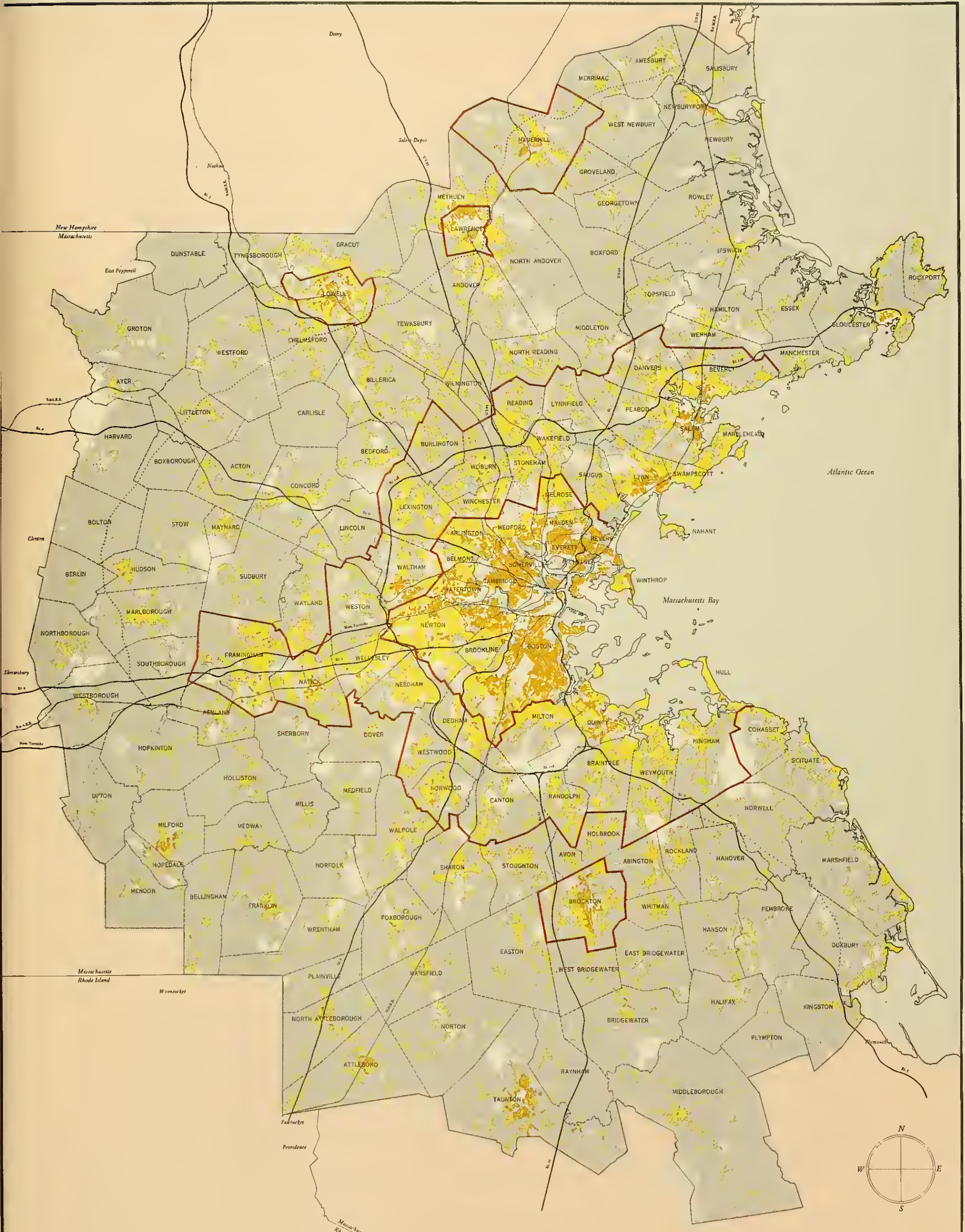
The distribution of residential land among the subareas is better explained by the intensity of its use. Eighty-eight per cent of Greater Boston's residential land is in single family use, 22% in multi-family.

TABLE IV. SELECTED STATISTICS ON RESIDENTIAL LAND USE IN GREATER BOSTON BY SUBREGION

(acreages are in thousands)

	Downtown Boston (1)	15 Core Cities* (2)	34 Inner Suburbs (3)	4 Outer Cities (4)	100 Outer Suburbs (5)	Total Study Area (6)
Total Residential Land in Acres	.4	41.7	83.4	14.3	130.9	270.3
% Distribution	.1%	15.4	30.8	5.3	48.4	100.0%
Residential Land As a % of						
Total Developed Land In Subarea	22.2%	56.7	60.9	64.9	59.11	59.6%
Total Land In Subarea	21.0%	51.6	32.7	30.2	11.2	17.4%
Per Cent Distribution of Population	2.1%	41.9	27.0	8.1	22.9	100.0%
Acres in Single Family Use	0	22.5	76.8	10.6	126.3	236.2
% Distribution	0%	9.5	32.5	4.5	53.5	100.0%
Acres in Multi-Family Use	.4	19.2	5.9	3.7	4.0	33.8
% Distribution	1.1%	58.6	17.9	11.3	12.2	100.0%
Per Cent Distribution Within Subareas						
Single Family	0%	54.0	92.9	74.1	96.9	87.8%
Multi-Family	100.0%	46.0	7.1	25.9	3.1	22.2%
Residential Acres/1000 Population	5.1	28.7	89.0	50.8	164.6	78.0

* Including Downtown Boston



MAP 3

RESIDENTIAL LAND USE

Single family in yellow, multi-family in brown.

As shown in Map 3, the extensive multi-family uses are heavily concentrated in the Core and Outer Cities while the single family uses are concentrated in the Suburbs. For the 134 suburban communities as a group, the share devoted to single family residential use rises to 95%. In the Core Cities the proportion is 55% in the single family use to 45% in multi-family. In the Outer Cities the relationship, as might be expected, falls somewhere between that for the Core and the Greater Boston region as a whole, 75% is in single family use, the remainder in multi-family.

When the distribution of housing in Greater Boston is examined more closely, it appears to violate the dictates of economic and transportation efficiency. There are very few American cities -- Philadelphia is another -- in which fine residential areas at surprisingly low densities exist within walking distance of the central business district. In most other cities such locations would be devoted to nonresidential uses.

Another feature of Greater Boston's residential land use pattern is that at about equal distances from Downtown Boston, significant differences in residential density can be found. In Chelsea, for example, residential density is three times that which exists in large parts of Brookline. Similarly, but further out, Maynard has nearly triple the density of its neighboring community, Acton. This pattern of varying residential density at about equal distances from Downtown Boston contributes greatly to the character and attractiveness of the Greater Boston Area.

A number of influences are reflected in this pattern. Greater Boston is finely subdivided into a great many cities and towns, and different densities have been induced by different zoning restrictions. High densities have generally developed in the communities served by the major transportation facilities, particularly the mass transit facilities. Community decisions to provide or not to provide municipal services have also been important factors. In addition, the tendency

of families of similar socio-economic status to locate near each other has reinforced localized density patterns.

The character of the edge of residential development also distinguishes the Greater Boston Area's residential land use pattern. In many American cities the edge is sharply defined by a street or the boundary of a particular housing development. In Greater Boston there is a gradual thinning out of development, and urban densities blend gradually into rural ones. The pattern of large-scale housing development has not developed as vigorously in this area as it has elsewhere in the nation, and this in combination with low values of agricultural land have combined to produce the gradual thinning out effect.

A related feature is that to a greater extent than in many other cities residential development in Greater Boston strings out in thin lines along the Area's roads. The result is a visual impression, even on secondary facilities, of virtually complete development well into the Outer Suburbs. This pattern of residential distribution is expensive to service and often visually dull for the traveler. Some argue it is wasteful of our land resources. On the other hand, it does leave interspersed with development relatively large tracts of open land readily accessible for informal local recreation.

Commercial Land Use

Commercial land describes land on which the retailing of goods and services takes place or which accommodates open amusement facilities such as outdoor movies and golf driving ranges. On the full-color land use map and on Map 3, commercial land is shown in red.

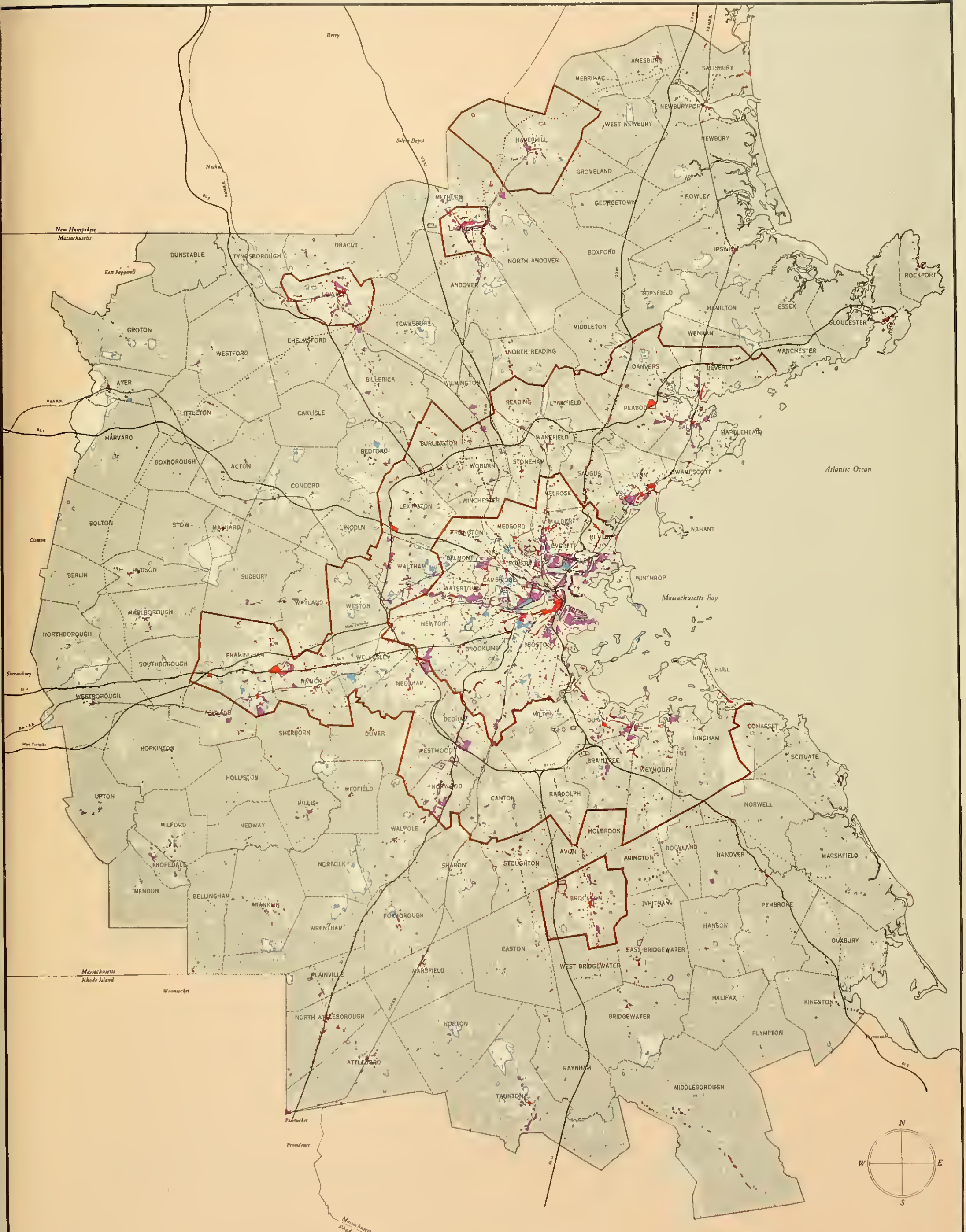
All told, there are only about 15,000 acres of commercial land in the Greater Boston Area, and these account for about 3 1/2% of the total developed area. Despite the well-established trend of business relocation to the suburbs, the Core Cities still allocate a larger share, 6.6%, of its developed land to commercial uses than does any other area.

TABLE V. SELECTED STATISTICS ON COMMERCIAL LAND USE IN GREATER BOSTON BY SUBREGION

	Down-town Boston	15 Core Cities*	34 Inner Suburbs	4 Outer Cities	100 Outer Suburbs	Total Study Area
	(1)	(2)	(3)	(4)	(5)	(6)
Commercial Land in 000's of Acres	0.45	4.8	4.5	0.8	5.2	15.3
Per Cent Distribution of Commercial Land	2.9	31.4	29.5	5.2	33.9	100.0
Commercial Land as a % of						
Total Developed Land	27.0	6.6	3.3	3.6	2.3	3.4
Total Land	25.6	6.0	1.8	1.7	0.4	1.0
Commercial Acres Per 1000 Persons	6.2	3.3	4.8	2.8	6.5	4.4
1948 Retail Sales in millions of dollars	n.a.	1,633	584	302	367	2,886
1958 Retail Sales in millions of dollars	n.a.	2,233	1,068	398	652	4,351
Per Cent Distribution of 1948 Sales	n.a.	56.58	20.24	10.46	12.72	100.0
Per Cent Distribution of 1958 Sales	n.a.	51.3	24.5	9.2	15.0	100.0
1958 Sales: $1,000/Comm. Acre	n.a.	463	236	497	126	284
1958 Sales: $'s Per Person	n.a.	1,536	1,140	1,411	820	1,255

n.a. Not available

* Including Downtown Boston



MAP 4

COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL LAND USE

Commercial in red, industrial in purple, institutional in blue.

This reflects the fact that the regional retail core is still located in Downtown Boston where 27% of all developed land is in commercial use.

As stated elsewhere, the distribution of any given kind of land reflects the distribution of the activity it accommodates, and though the Core Cities' share of Greater Boston retail sales has been declining, over half of all Greater Boston sales were still transacted in this area in 1958.

Retail sales per acre or "commercial density" display an intra-subarea pattern which is similar to that of residential density. In the cities sales per acre far exceed the regional average. The finding that they are greater in the Outer Cities than they are in the Core Cities is at first surprising. This, however, is a statistical anomaly and reflects the fact that certain nonretailing commercial uses are also counted in the land tabulations. As this commercial land on which retail sales do not take place is heavily concentrated in Downtown Boston, the Core's rate of sales per acre is correspondingly reduced.

In the suburban communities sales per acre are well below the regional average, that is, commercial land is used at a lower intensity. In the suburbs retail sales take place in buildings which have fewer stories than those in the older, built-up areas, and a larger proportion of the land on which these sales occur is devoted to parking facilities.

Industrial Land Use

Industrial land refers to land on which manufacturing and wholesaling activity takes place or which is the site of an extractive operation like that which occurs at a gravel pit. On Map 3 and on the full-color land use map, this land is shown in purple.

All told, there are almost 19,000 acres of industrial land in the Greater Boston Area, and these account for just over 4% of all of the total developed land. The statistics on the distribution of this land and

TABLE VI. SELECTED STATISTICS ON INDUSTRIAL LAND USE IN GREATER BOSTON BY SUBREGION

	Downtown Boston (1)	15 Core Cities* (2)	34 Inner Suburbs (3)	4 Outer Cities (4)	100 Outer Suburbs (5)	Total Study Area (6)
Industrial Land in 000's of Acres	0.33	6.1	5.6	1.3	5.7	18.7
Per Cent Distribution of Industrial Land	1.8	32.5	30.0	7.1	30.4	100.0
Industrial Land as a % of						
Total Developed Land	19.8	8.2	4.1	6.0	2.6	4.1
Total Land	18.8	7.5	2.2	2.8	0.5	1.2
Industrial Acres Per 1000 Persons	4.52	4.17	5.98	4.71	7.14	5.4
1950 Manufacturing and Wholesaling Employment in 000's	n.a.	217.4	100.6	70.9	85.2	474.1
1960 Manufacturing and Wholesaling Employment in 000's	n.a.	221.7	130.9	52.9	106.3	511.8
Per Cent Distribution of 1950 Employment	n.a.	45.86	21.22	14.95	17.97	100.0
Per Cent Distribution of 1960 Employment	n.a.	43.3	25.6	10.4	20.8	100.0
1960 Employment/Industrial Acre	n.a.	36.6	23.4	39.8	18.7	27.4

n.a. Not available.

* Including Downtown Boston

other related characteristics of it are shown in Table VI. No further discussion of industrial land use is undertaken here. The reader is referred to Industrial Land Needs Through 1980, Report No. 2 in GBESC's Land Use Series. In addition to projecting industrial land needs, this report presents a detailed analysis of current industrial land use.

Institutional Land Use

Institutional land is shown in blue on both Map 3 and the full-color land use map. In both cases blue lines define the perimeters of institutional land holdings, but in the full-color map that part of the holding which is not occupied by a building is shown in green. In Map 3 these areas are white.

Institutional land includes land used by both public and private schools, hospitals, museums, churches, cemeteries, military establishments, etc. All told, there are 60,000 acres of such land in Greater Boston, and these account for just over 13% of the total developed area.

Because of the large institutional holdings which occur in the Outer Suburbs, almost 60% of all institutional land is located in this subregion. In contrast, the Core, which contains just over 30% of all commercial and industrial land, accounts for just under 15% of all land devoted to institutional uses. Table VII presents selected statistics on institutional use, and they show, as was noted earlier, that institutional land is much more intensively used in the Core and Outer Cities than it is in the suburban communities.

As institutional land accommodates a wide variety of social and economic activities, it is perhaps the most cumbersome of the eight major categories. For this reason, an effort was made to estimate the amount of land in each institutional use. In presenting these estimates

TABLE VII. SELECTED STATISTICS ON INSTITUTIONAL LAND USE IN GREATER BOSTON BY SUBREGION

	Down-town Boston	15 Core Cities*	34 Inner Suburbs	4 Outer Cities	100 Outer Suburbs	Total Study Area
	(1)	(2)	(3)	(4)	(5)	(6)
Institutional Land in 000's of Acres	0.18	8.59	14.44	1.74	35.52	60.29
Per Cent Distribution of Institutional Land	0.30	14.25	23.95	2.89	58.91	100.0
Institutional Land as a % of						
Total Developed Land	10.78	11.67	10.55	7.87	16.04	13.28
Total Land	10.23	10.62	5.67	3.67	3.03	3.88
Institutional Acres Per 1000 Persons	2.46	5.91	15.42	6.17	44.67	17.39
Hospital Patients Per Acre	n.a.	17	6	20	3	5
College and Private School Students Per Acre	n.a.	46	5	20	2	12

n.a. Not available

* Including Downtown Boston

in Table VIII, it is emphasized that they are only approximations and were not determined by means of individual community surveys.

TABLE VIII. INSTITUTIONAL LAND USE BY TYPE

Type of Institutional Use	Total Acres (1)	Per Cent Acres (2)
Colleges and Private Schools	8,000	13.3%
Medical	7,700	12.8
Religious	4,000	6.6
Prisons	3,500	5.8
Federal Areas	15,500	25.7
Municipal Use	11,000	18.2
Cemeteries	10,500	17.4
Total Instituional Land Use	60,300	100.0%

Land Use by Public Utilities

In 1960 public utilities used about 19,000 acres of land in Greater Boston. This is just over 4% of the total developed area and is about the same amount of land as was devoted to industrial uses.

As shown in Table X the public utilities category is made up of a wide range of specialized uses including three in transportation, dumps, sewage disposal uses, and one relating to water resources. Because these are quite different uses and vary greatly in their location characteristics, the distribution of land used by public utilities cannot be easily explained in terms of a single broad influence. Within the transportation subgroup, for example, about a third of the airport facilities and most of

TABLE IX. SELECTED STATISTICS ON LAND USE BY PUBLIC UTILITIES IN GREATER BOSTON BY SUBREGION

Land Used By Public Utilities	Down-town Boston	15 Core Cities*	34 Inner Suburbs	4 Outer Cities	100 Outer Suburbs	Total Study Area
	(1)	(2)	(3)	(4)	(5)	(6)
In 000's of acres	0.19	2.94	6.09	1.20	8.66	18.89
Per Cent Distribution	1.01	15.56	32.24	6.35	45.84	100.00
Per Cent of Total Developed Land	11.38	4.00	4.45	5.43	3.91	4.16
Per Cent of Total Land	10.80	3.64	2.39	2.53	0.74	1.21
Acres Per 1000 Persons	2.60	2.02	6.50	4.25	10.89	5.45

* Including Downtown Boston

TABLE X. LAND USE BY TYPE OF PUBLIC UTILITY

Type of Public Utility		Estimated Total Acres		Per Cent Acres
		(1)		(2)
Transportation		8700		46.0%
Airports	4400		23.3	
Railroad Yards	1000		5.3	
Expressway Interchanges	3300		17.5	
Sewage Treatment		500		2.6
Dumps		500		2.6
Watersheds & Reservoirs		9200		48.7
Total Land Use By Public Utilities		18,900		100.0%

the rail yards are located in the City of Boston. The interchanges in contrast are dispersed throughout the region. Watershed and reservoir uses are to be found in the outlying region mainly. Therefore, as a broad category, public utilities are widely dispersed, and the percentage of the total developed area they occupy is about the same for each of the four major subareas.

Recreational Land Use

Land occupied by local parks, large public parks or public forests, public and private golf courses and country clubs is defined as recreational land. All told, there are about 70,000 acres of such land, and these account for just over 15% of the total developed area. In the full-color map, these uses are identified in three shades of green, but on Map 5 they are all shown in a single green tone.

Recreational land is the second largest use of land, 15 1/2%, in the Greater Boston region. This might suggest that the Greater Boston Area is well provided with recreational space. In fact, however, the quality and distribution of this land leaves much to be desired. As shown in Table XI, the Core and Outer Cities have together less than 20% of all recreational land but about 50% of the regional population. There is, as a result, a great disparity among the subareas in the number of recreational acres available per thousand persons. In the Outer Suburbs, for example, there are about 45 acres per thousand persons while in the heavily populated Core Cities there are only about 6 1/2.

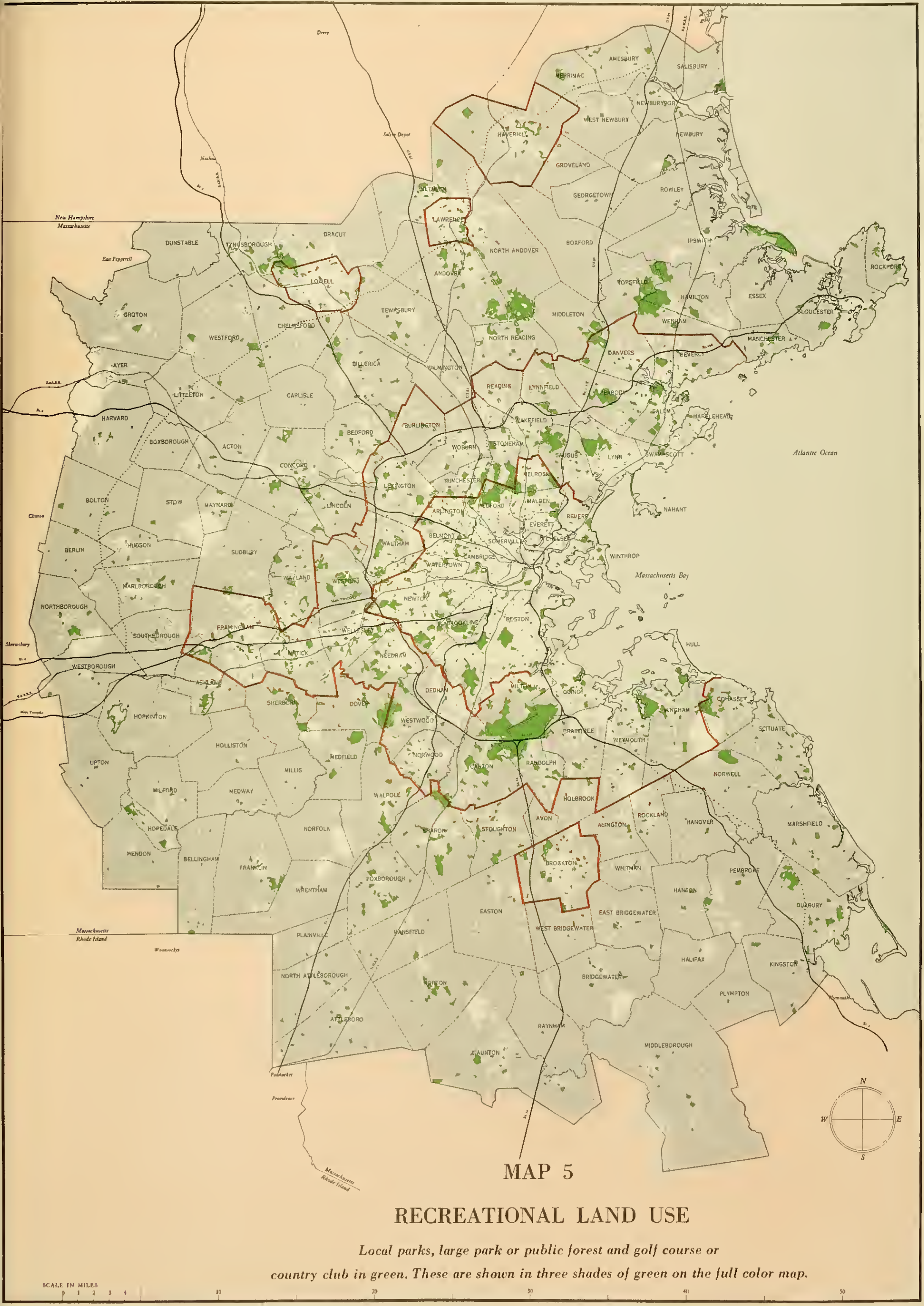
With respect to the quality of the recreational land, it has been said that much of it is "greener on the map than it is on the ground."

As there is a great deal of open land still available in Greater Boston, this area need not lack for good recreational space. But in the "race for open space," this will not be assured unless a systematic program of recreational development is pursued. In addition, if the recreational land which has not been kept up is restored to an enjoyable level, this region can become one of the most richly endowed in recreational opportunities.

TABLE XI. SELECTED STATISTICS ON RECREATIONAL LAND IN GREATER BOSTON BY SUBREGION

	Down-town Boston (1)	15 Core Cities* (2)	34 Inner Suburbs (3)	4 Outer Cities (4)	100 Outer Suburbs (5)	Total Study Area (6)
Recreational Land in 000's of acres						
Local	0.02	3.50	7.12	1.83	12.48	24.94
Regional	0.14	4.14	11.18	0.30	17.38	32.99
Public and Private Golf Courses	0	1.81	4.50	0.57	5.61	12.49
Total	0.15	9.45	22.81	2.69	35.47	70.42
Per Cent Distribution of Recreational Land	0.21	13.42	32.39	3.82	50.37	100.00
Recreational Land as a % of						
Total Developed Land	8.98	12.81	16.67	12.7	16.02	15.51
Total Land	8.52	11.69	8.96	5.67	3.03	4.53
Recreational Acres Per 1000 persons	2.05	6.50	24.36	9.53	44.61	20.31

* Including Downtown Boston



MAP 5

RECREATIONAL LAND USE

Local parks, large park or public forest and golf course or country club in green. These are shown in three shades of green on the full color map.

Open Land Resources

About 70% of all land in the Greater Boston Area is still open. That is, it is either under some form of forest or wildlife management, in an agricultural use, or is vacant. This land is shown in gray in Maps 1, 3, 4, and 5. All told, there are about 1,100,000 acres of open land, and of these about 30% are agricultural and 70% is vacant. Forest and wildlife management account for a relatively small fraction.

The so-called "race for open space" is concerned with the issue of how the open land will ultimately be used. It is estimated that four-fifths of it, over 800,000 acres, is suitable for development, that is, it is well drained and has slopes not exceeding 15%.

Clearly, there is far more land available within the Greater Boston region than is likely to be needed in the foreseeable future. But the implication of this is not that we can be indifferent to the way in which this land is used for there are efficient and inefficient choices in the distribution of activities on the land.

In our society this distribution is the net result of thousands of independent decisions by businessmen, householders, and governments, and the principal control over these decisions is the zoning regulation. As each of the 153 communities in the Greater Boston Area zones for itself, the total zoning pattern does not define a metropolitan guideline. The future pattern of development will, therefore, continue to reflect this vast array of independent decisions made within the constraints, first, of local zoning regulations and, second, of the regional transportation system.

It is, nevertheless, useful to examine this total zoning picture, and Table XII presents the zoning information as of 1960. Four broad zoning categories -- single family residential, multi-family, commercial and industrial -- are shown. Over 90% of the land is zoned for single family use and 7% for industry. Multi-family residential and

commercial uses each account for just over one per cent. This is clearly an extraordinary but understandable relationship. It expresses, on the one hand, a preference throughout the region for residential development at low densities and, on the other, a preference for manufacturing industry rather than commercial enterprise as business increments to the tax base.

TABLE XII. SELECTED STATISTICS ON THE ZONING OF VACANT AND AGRICULTURAL LAND IN GREATER BOSTON BY SUBREGION

Zoning	15 Core Cities (1)	34 Inner Suburbs (2)	4 Outer Cities (3)	100 Outer Suburbs* (4)	Total Study Area* (5)
			(in thousands of acres)		
Single Family	3.4	97.3	21.4	853.1	975.3
Multi-Family	1.2	0.7	0.3	13.0	15.2
Commercial	0.3	2.3	1.2	9.3	13.1
Industrial	1.7	15.7	2.4	55.9	75.6
Total Vacant Land	6.5	116.0	25.2	931.4	1079.2
			(per cent distribution)		
Single Family	51.3	83.9	85.0	91.6	90.4
Multi-Family	17.9	0.6	1.0	1.4	1.4
Commercial	5.0	2.0	4.7	1.0	1.2
Industrial	25.8	13.5	9.4	6.0	7.0
Total Vacant Land	100.0	100.0	100.0	100.0	100.0
			(per cent suitable and unsuitable)		
Suitable	75.4	68.2	87.6	75.1	74.3
Unsuitable					
Slope greater than 15%	4.5	9.2	2.0	4.6	5.2
Swampy	20.1	22.6	10.4	20.3	20.5
Total Vacant Land	100.0	100.0	100.0	100.0	100.0

* Estimated from incomplete sample.

TABLE XIII. LAND USE AND ZONING COMPARED IN GREATER BOSTON

	Thousands of Acres		Per Cent Distribution		Ratio of Zoning to Use
	In Use	Zoned	In Use	Zoned	
	(1)	(2)	(3)	(4)	(5)
Single Family	236.2	975.3	77.5%	90.4%	4.1
Multi-Family	32.8	15.2	11.4	1.4	0.5
Industrial	18.7	75.6	6.2	7.0	4.3
Commercial	15.3	13.1	4.9	1.2	0.9
Four Categories	303.0	1079.2	100.0%	100.0%	3.6

The data which relate acres in use to acres zoned reinforce this general impression of community preferences. For single family residential and industrial purposes, there are just over 4 acres zoned for each one in use. For multi-family residential and commercial purposes, there is less than one.

APPENDIX A. LAND USE DATA BY DETAILED LAND USE CATEGORIES FOR 153 CITIES AND TOWNS IN GREATER BOSTON

In the following explanation, the number and letter designations correspond to the column headings in the tables which follow.

1. Residential
   (a) Single Family - for one household
   (b) Multi Family - for two or more households
   (c) Under construction - started but not occupied

   Residential land was tabulated on a use basis, rather than by ownership Therefore, only land actually used for structures and adjacent yards was tabulated and only up to two acres was counted, even though ownership was more extensive in some cases.

2. Commercial
   (a) Retail and services - including accessory parking, service areas, and landscaping
   (b) Open Amusement - outdoor places of commercial amusement, such as drive-in movies, and golf driving ranges
3. Manufacturing and Wholesaling
   (a) Industrial, warehousing, bulk storage, power plants, and accessory service and parking areas
   (b) Mining, principally gravel pits
4. Public Utilities
   (a) Transportation facilities, such as rail yards, airports, and expressway interchanges, but not expressways between interchanges, and local streets. These have been included in adjacent land uses.
   (b) Sewage treatment facilities
   (c) Dumps

    (d) Watershed reservations surrounding ponds; but not the ponds
    (water areas are omitted throughout)

5. Institutional land for both public and private schools, hospitals, museums, churches, military reservations, etc.
    (a) Those with small holdings, usually urban
    (b) Those with large holdings
    (c) Cemeteries
6. Recreation
    (a) Local parks, playgrounds, and playfields, including the grounds of public schools, serving a neighborhood
    (b) Same as (a) but serving the whole community
    (c) Large parks or public forests
    (d) Semi-public holdings, e.g. Trustees of Reservations property
    (e) Private areas such as scout camps

    Note: (c), (d), and (e) are shown in the same color on the full-color land use map.

    (f) Private golf and other clubs
    (g) Public golf courses
7. Forest or Wildlife Management
    (a) Public land reserves inaccessible for general recreation use
    (b) Undeveloped town land
8. Agricultural or Vacant Land
    (a) Suitable, having less than 15% slope and not swampy
    (b) Under development for commercial or industrial uses
    (c) Total vacant and agricultural

Definitions

1. Developed Land is the sum of Categories 1 through 6.
2. Total Open Land is the sum of Categories 7 plus 8.
3. Urbanized Land equals Developed Land minus 4(d), 5(b) and 6.
4. Developable Land measures land available for local development. It equals total land minus land preempted for regional use, 4(d), 5 (b), 6(d) and unsuitable vacant land, 8(b-a).

Unpublished Information Available

The detailed land use data for each of the 153 cities and towns which follows immediately has been electronically tabulated. A great deal of statistical information is, therefore, in existence, but it is so voluminous that it could not be printed in this report.

For each of the 153 cities and towns, the following is available:

1. Per Cent Distribution by detailed land use categories
2. Per Cent Distribution of total developed land
3. Urbanized area
4. Developed area
5. Developable area
6. Urbanized area/developable area
7. Persons/acre by land use categories
8. Acres/persons by land use categories
9. Zoning of vacant land by category and its distribution into suitable and unsuitable
10. Per Cent distribution of zoned land by category

The Study Area was also subdivided into 17 subregions. As distinct from the four broad subareas described in the text, these are the Core (15 cities and towns) and 8 subareas each for the Inner Suburbs and Outer Suburbs. The data noted above for each of the 153 cities and towns is also available for each of these 17 subareas.

LAND USE IN GREATER BOSTON, 1960

(figures shown are in acres)

GREATER BOSTON	1960 POPULATION	RESIDENTIAL			COMMERCIAL		MANUFACTURING & WHOLESALING		PUBLIC UTILITIES			
The 153 Cities and Towns in Greater Boston		Single Family	Multi Family	Under Construction	Retail-Services	Open Amusement	Industrial-Warehouse	Extractive	Transportation	Sewage Disposal	Refuse Disposal	Water Shed Reservation
		1a	1b	1c	2a	2b	3a	3b	4a	4b	4c	4d
CORE	1453740	22481	19236	5	4458	357	5963	98	2836	31	61	8
Arlington	49953	1642	844	...	82	...	12	...	...	...	...	...
Belmont	28715	1300	350	...	50	...	...	...	...	...	...	...
Boston	697197	5084	8079	...	2004	166	2974	56	1964	24	33	...
Brookline	54044	1678	876	...	140	...	26	...	...	...	...	...
Cambridge	107716	114	1189	5	298	17	844	...	181	...	...	8
Chelsea	33749	8	550	...	60	...	274	...	49	...	...	...
Everett	43544	...	980	...	150	...	518	...	234	...	...	...
Malden	57676	772	1070	...	296	...	162	...	...	...	...	...
Medford	64971	1146	1058	...	232	46	158	...	...	...	18	...
Melrose	29619	1748	219	...	40	...	39	6	38	7	10	...
Newton	92384	7744	463	...	167	28	117	36	...	...	...	...
Revere	40080	225	1185	...	670	100	10	...	32	...	...	...
Somerville	94697	...	1542	...	133	...	346	...	294	...	...	...
Watertown	39092	510	655	...	120	...	483	...	24	...	...	...
Winthrop	20303	510	176	...	16	...	...	...	20	...	...	...
INNER SUBURBS	936422	76823	5871	680	4148	367	5022	582	2207	107	210	3570
Beverly	36108	2760	263	...	121	...	80	...	188	...	...	46
Braintree	31069	3036	115	...	154	32	212	8	250	...	...	194
Burlington	12852	1445	...	...	30	15	75	75	...	...	...	...
Canton	12771	2310	25	100	20	10	111	66	56	...	4	...
Danvers	21926	2270	34	...	110	...	68	12	278	...	...	214
Dedham	23869	2323	200	...	102	8	282	108	124	...	28	162
Framingham	44526	4297	100	441	358	22	346	...	154	...	...	40
Hingham	15378	2440	25	...	30	...	133	122	...	...	2	...
Hull	7055	908	24	...	106	...	...	...	...	...	...	...
Lexington	27691	4200	47	65	45	...	13	...	282	...	15	319
Lynn	94478	2090	1078	...	358	...	448	...	...	...	...	...
Lynnfield	8398	1275	...	...	45	...	...	...	...	...	...	425
Marblehead	18521	1655	25	...	65	...	5	...	...	...	...	...
Milton	26375	2822	18	...	32	...	26	...	26	...	...	...
Nahant	3960	340	...	...	4	...	...	...	...	...	12	...
Natick	28831	3478	230	...	201	26	208	36	...	80	68	100
Needham	25793	3559	5	...	90	...	217	...	126	...	...	...
Norwood	24898	1952	142	...	102	68	334	...	458	26	34	132
Peabody	32202	2665	65	74	275	...	270	...	10	...	...	...
Quincy	87409	2418	1392	...	428	...	394	16	118	...	...	...
Randolph	18900	1975	...	...	55	...	15	...	36	...	...	336
Reading	19259	2250	105	...	100	...	60	...	...	...	...	150
Salem	39211	635	775	...	155	...	335	35	...	...	...	...
Saugus	20666	1820	80	...	260	...	85	30	...	...	...	...
Stoneham	17821	1365	15	...	60	...	5	...	...	...	...	128
Swampscott	13294	1089	57	...	42	...	66	...	...	...	...	...
Wakefield	24295	1940	40	...	51	170	70	...	...	...	...	...
Waltham	55413	1886	704	...	182	...	576	...	58	...	...	200
Wellesley	26071	3366	72	...	107	...	52	...	7	1	47	180
Weston	8261	1654	...	...	36	...	16	66	2	...	...	436
Westwood	10354	1775	5	...	10	...	100	...	20	...	...	...
Weymouth	48177	4315	40	...	204	16	135	...	14	...	...	480
Winchester	19376	1880	85	...	60	...	75	...	...	...	...	28
Woburn	31214	2630	105	...	150	...	210	8	...	...	...	...

See Appendix A for a more detailed explanation of the land use categories and data.

INSTITUTION-GOV'T			RECREATION							LAND MANAGEMENT		VACANT & RURAL			TOTAL LAND
Small Holdings	With Large Grounds	Cemeteries	Neighborhood Facilities	Community Facilities	Regional Facilities	Semi-Public Regional	Other Regional	Golf and Other Clubs	Public Golf Courses	Forest-Wildlife	Undeveloped Town Land	Suitable	Under Development	Total	
5a	5b	5c	6a	6b	6c	6d	6e	6f	6g	7a	7b	8a	8b	8c	9
3261	2711	2614	1741	1758	3862	279	...	1270	543	...	732	4971	201	6543	80848
116	36	36	174	10	...	...	...	90	...	...	...	164	...	198	3240
50	400	20	96	10	...	...	...	124	...	...	20	346	...	434	2854
2117	1022	1400	694	1010	1571	...	...	24	158	...	229	1576	37	1777	30386
166	100	118	138	50	86	...	...	204	152	...	...	472	...	484	4218
125	305	109	64	53	129	279	...	...	96	...	...	186	20	186	4002
10	100	14	24	...	...	...	...	...	...	...	...	138	...	184	1273
166	...	155	37	18	...	...	...	...	...	...	...	16	...	28	2286
...	136	194	62	90	56	...	...	...	...	...	...	296	...	414	3252
104	100	156	50	42	1329	...	...	...	...	...	291	426	...	474	5204
53	...	55	23	239	180	...	...	47	111	...	69	46	...	150	3034
80	303	128	210	102	270	...	...	638	26	...	123	443	...	699	11134
70	...	...	47	...	148	...	...	...	...	...	...	757	120	1321	3808
133	65	2	49	40	12	...	...	...	...	...	...	6	...	6	2622
56	84	217	59	78	81	...	...	78	...	...	...	89	24	89	2534
15	60	10	14	16	...	...	...	65	...	...	...	10	...	99	1001
1744	9524	3168	2013	5111	9737	120	1320	3423	1081	78	1731	79764	1707	116024	254661
28	100	54	28	146	...	...	...	323	...	...	...	3078	...	5374	9511
64	115	132	30	180	70	...	...	8	...	...	47	2454	40	4050	8697
15	...	20	72	40	...	...	...	...	...	...	...	3950	482	5550	7337
6	22	494	22	86	601	...	...	360	174	50	333	4400	...	7238	12088
24	588	152	70	...	...	...	...	...	...	...	...	3905	...	4909	8729
38	224	56	52	33	557	...	...	118	...	...	...	1065	5	2305	6720
68	812	140	94	250	568	...	40	200	...	...	...	5858	334	7378	15308
48	2910	26	59	129	...	110	195	164	...	...	...	5537	...	7658	14051
38	16	6	...	119	26	...	...	...	...	...	...	102	...	214	1457
137	360	50	23	63	124	...	7	70	107	...	222	3143	106	4501	10650
150	...	221	53	1142	57	...	...	...	154	...	...	633	...	905	6656
35	...	18	38	...	...	...	...	120	174	...	...	2754	...	4360	6490
30	...	74	49	37	...	...	25	32	...	...	...	553	...	775	2772
46	304	98	26	116	1924	10	125	60	...	...	...	1984	...	2822	8455
2	64	6	14	12	86	...	6	8	...	...	...	94	...	118	672
45	152	94	28	126	282	...	31	...	68	...	41	3327	40	4229	9523
100	106	46	100	393	...	...	248	126	...	...	637	1557	31	2245	7998
48	...	28	118	54	...	...	...	...	...	...	50	2109	144	3155	6701
25	34	260	67	48	...	...	...	614	...	...	...	4772	...	6121	10528
158	60	56	170	138	2632	...	...	106	...	...	...	1766	...	2460	10546
15	90	130	14	36	849	...	...	...	...	...	...	1831	...	2725	6276
44	96	24	82	14	...	...	...	...	...	...	12	1383	...	3361	6298
50	148	182	26	118	47	...	...	216	118	...	...	1370	...	2165	5005
30	52	16	60	...	517	...	40	...	102	...	298	2050	...	3440	6830
29	46	57	15	...	956	...	...	74	104	...	...	763	...	975	3829
49	...	36	13	30	...	...	...	214	...	...	...	225	...	309	1905
15	28	105	53	296	100	...	...	20	...	...	...	896	126	1816	4704
22	1020	98	74	362	60	...	66	...	...	...	...	1914	172	2672	7980
40	856	55	168	292	...	...	...	124	...	...	25	794	...	1040	6432
178	558	74	60	400	...	...	...	238	80	28	56	5430	...	7068	10950
10	...	8	65	...	...	...	537	110	...	...	10	3506	172	4400	7050
62	763	100	177	68	...	...	...	...	...	...	...	2199	...	4314	10688
40	...	122	48	173	281	...	...	118	...	...	...	599	...	830	3740
55	...	130	45	210	...	...	...	...	...	...	...	3763	55	4542	8085

GREATER BOSTON	1960 POPULATION	RESIDENTIAL			COMMERCIAL		MANUFACTURING & WHOLESALING		PUBLIC UTILITIES			
The 153 Cities and Towns in Greater Boston		Single Family 1a	Multi Family 1b	Under Construction 1c	Retail-Services 2a	Open Amusement 2b	Industrial-Warehouse 3a	Extractive 3b	Transportation 4a	Sewage Disposal 4b	Refuse Disposal 4c	Watershed Reservation 4d
OUTER SUBURBS	795182	126289	3992	581	4693	500	4018	1663	3235	200	157	5072
Abington	10607	1265	10	...	35	...	35	...	...	...	...	...
Acton	7238	1465	...	...	25	...	86	...	...	...	14	24
Amesbury	10787	1020	86	...	56	...	74	42	...	...	...	56
Andover	15878	2320	38	...	30	...	83	24	156	...	...	140
Ashland	7779	1420	35	...	15	...	240	...	...	...	...	...
Attleboro	27118	2572	220	...	70	...	216	...	50	...	...	...
Avon	4301	365	5	...	10	...	5	...	...	...	...	105
Ayer	14927	430	...	...	66	...	22	...	60	12	10	...
Bedford	10969	1410	185	...	70	...	160	...	848	...	...	196
Bellingham	6774	2127	180	...	161	...	23	...	...	...	...	...
Berlin	1742	322	...	...	10	...	...	...	...	...	...	...
Billerica	17867	2485	...	...	55	...	100	...	174	...	...	...
Bolton	1264	428	...	...	4	...	2	24	...	...	...	...
Boxborough	744	218	...	...	2	...	...	...	24	...	...	...
Boxford	2010	1052	...	...	100	...	4	...	...	...	26	...
Bridgewater	10276	1020	25	...	70	...	35	...	...	...	...	...
Carlisle	1488	430	...	...	5	...	...	...	...	...	...	...
Chelmsford	15130	2600	...	168	60	...	45	...	102	...	...	...
Cohasset	5840	1184	40	...	29	...	5	...	...	...	...	...
Concord	12517	1736	...	...	16	...	49	...	248	...	...	...
Dover	2846	975	...	...	5	...	5	...	...	...	...	...
Dracut	13674	3122	16	...	62	...	50	20	...	12	...	66
Dunstable	824	258	...	...	2	...	2	...	...	...	...	...
Duxbury	4727	2695	...	...	45	...	5	...	...	...	...	...
E.Bridgewater	6139	1128	...	...	76	...	42	118	...	...	...	...
Easton	9078	1780	...	...	64	...	44	12	...	...	...	...
Essex	2238	923	...	3	36	...	5	...	...	...	1	2
Foxborough	10136	1250	45	...	56	94	35	16	...	...	8	...
Franklin	10530	1122	100	230	40	...	125	...	...	...	...	...
Georgetown	3755	926	...	...	24	18	4	...	...	...	...	...
Gloucester	25789	2350	143	...	138	12	80	...	...	...	...	754
Groton	3904	1026	...	...	32	...	22	...	...	...	...	...
Groveland	3297	650	...	...	18	10	20	...	...	...	...	...
Halifax	1599	1020	...	...	58	...	15	...	...	...	...	...
Hamilton	5488	1001	...	...	26	...	...	...	...	...	...	...
Hanover	5923	1165	...	...	65	...	55	...	...	...	...	...
Hanson	4370	950	5	5	10	...	25	10	4	...	2	...
Harvard	2563	588	...	...	28	...	...	...	...	...	...	...
Holbrook	10104	1094	...	...	46	...	20	32	...	...	...	...
Holliston	6222	931	...	65	35	...	10	...	...	...	...	...
Hopedale	3987	434	74	...	14	...	48	36	158	28	...	...
Hopkinton	4932	1090	8	...	46	...	6	...	...	...	...	...
Hudson	9666	1432	60	...	46	...	38	...	...	34	...	...
Ipswich	8544	2062	15	...	75	...	51	...	...	...	...	...
Kingston	4302	766	...	...	72	...	18	12	...	...	...	...
Lincoln	5613	1380	...	...	30	...	...	...	92	...	...	...
Littleton	5109	1120	50	...	42	...	100	200	...	...	10	...
Manchester	3932	1025	...	...	15	...	5	...	16	...	...	...
Mansfield	7773	1088	40	...	36	...	82	16	196	...	...	...
Marlborough	18819	2558	70	...	150	...	56	...	24	56	...	428
Marshfield	6748	2250	...	...	72	10	16	...	...	...	10	...
Maynard	7695	496	27	...	19	...	24	...	...	...	...	...
Medfield	6021	1586	40	...	24	...	16	20	...	2	...	...
Medway	5168	790	10	...	25	...	20	...	...	...	...	...
Mendon	2068	712	...	...	12	10	6	...	56	...	...	...

INSTITUTION-GOV'T			RECREATION							LAND MANAGEMENT		VACANT & RURAL			TOTAL LAND
Small Holdings	With Large Grounds	Cemeteries	Neighborhood Facilities	Community Facilities	Regional Facilities	Semi-Public Regional	Other Regional	Golf and Other Clubs	Public Golf Courses	Forest-Wildlife	Undeveloped Town Land	Suitable	Under Development	Total	
5a	5b	5c	6a	6b	6c	6d	6e	6f	6g	7a	7b	8a	8b	8c	9
1823	29831	3869	2330	10152	10099	2725	4553	4252	1354	17334	1957	717572	1278	931358	1172037
5	174	55	5	49	...	...	...	...	...	518	...	3468	...	4104	6255
10	206	50	62	90	...	...	52	...	...	...	...	8798	238	10746	12830
32	...	184	10	94	...	...	68	110	...	...	...	4656	...	6264	8096
50	595	191	100	103	926	72	...	206	...	...	40	11996	...	14830	19904
15	...	64	40	20	588	...	...	...	...	842	...	3963	...	4663	7942
70	84	58	32	36	20	...	...	64	...	86	...	11372	...	13798	17376
5	...	15	...	...	...	...	...	...	...	...	...	1758	...	2180	2690
10	1228	14	12	106	...	...	...	...	...	...	...	2985	...	3675	5645
24	566	75	84	94	...	...	...	...	...	...	...	3498	...	5009	8721
30	...	20	10	...	...	...	...	...	133	...	...	8253	...	9145	11829
9	...	10	12	...	...	...	...	46	...	...	...	6607	...	7917	8326
50	440	10	50	104	408	...	...	158	20	...	...	10428	...	12124	16178
6	106	12	...	...	41	...	...	24	86	...	...	10012	...	12022	12755
6	...	4	10	...	...	...	...	...	...	...	...	4525	...	6385	6649
16	...	30	...	...	...	...	...	...	...	872	...	9935	...	13254	15354
18	1377	25	10	...	...	...	...	...	...	...	84	11241	...	14338	17002
5	...	...	5	...	...	...	...	...	...	...	52	6941	...	9340	9837
10	62	93	45	45	...	...	...	...	...	...	...	9546	...	11010	14240
44	844	10	38	146	...	456	...	118	...	...	...	2300	...	3366	6280
12	844	111	60	171	418	...	...	284	...	250	...	8479	...	11287	15486
12	272	13	16	121	...	...	547	...	...	...	140	5454	...	7596	9702
19	...	2	26	22	560	...	...	...	...	...	...	7779	...	9389	13366
6	...	6	...	...	...	...	14	...	...	...	...	8317	...	10605	10893
20	80	24	46	459	...	...	569	132	...	...	...	8856	...	11390	15465
12	...	20	62	60	...	...	...	...	...	...	...	7936	114	9548	11066
35	558	42	...	68	...	...	...	...	...	...	...	12223	...	15583	18186
6	...	2	2	...	...	1	...	...	1	...	188	3710	...	7905	9075
10	224	35	43	32	...	...	90	...	...	698	543	7770	...	9200	12379
26	481	46	25	322	...	...	...	128	...	770	...	10876	...	13737	17152
10	...	18	...	...	...	...	...	...	...	580	...	5139	...	6804	8384
30	41	78	52	390	...	81	...	...	52	...	...	8213	...	12554	16755
22	666	30	...	16	...	...	...	...	148	...	...	14602	...	18864	20826
10	...	...	10	...	...	...	...	...	...	796	...	2858	...	4182	5696
12	32	6	2	...	...	...	...	...	...	...	...	6020	...	9080	10225
18	612	10	2	14	588	...	748	184	...	...	...	3709	...	6179	9382
20	...	30	20	...	...	...	...	...	...	...	...	6052	...	8330	9685
5	81	14	12	9	...	...	36	49	...	35	200	5743	25	8257	9709
6	3674	18	...	18	...	...	...	...	...	...	...	10108	...	12532	16864
8	...	16	10	70	...	...	...	...	...	...	...	2389	...	3203	4499
10	...	30	10	175	...	...	...	...	...	...	...	8555	...	10823	12089
20	...	...	10	436	6	...	...	...	...	...	...	1827	...	2013	3277
2	...	22	2	...	1018	...	...	...	...	412	...	11986	...	14290	16896
15	138	48	2	29	...	...	...	...	...	116	...	4614	...	5529	7487
28	774	35	24	32	...	1244	...	...	...	2945	...	7999	...	13973	21258
30	46	34	14	102	174	...	26	...	...	...	72	8814	...	10506	11872
22	546	35	74	352	308	...	75	...	...	...	...	4365	...	6404	9318
44	...	20	96	32	...	...	...	15	...	...	...	7451	200	8803	10532
34	...	12	16	94	...	76	...	216	...	...	...	2764	...	3432	4941
26	...	34	12	486	...	...	...	...	...	...	110	9803	...	10815	12941
22	208	94	10	80	...	...	...	266	...	218	...	8514	546	9194	13434
4	20	18	10	104	...	...	...	158	...	24	154	10832	...	15294	18144
9	852	40	31	22	...	...	...	98	...	...	...	1210	...	1736	3354
10	694	20	18	30	...	420	90	...	...	...	...	3555	...	6265	9235
10	...	25	10	...	...	...	...	...	...	...	...	5235	...	6505	7395
10	...	30	...	...	...	...	...	...	...	...	...	9267	...	10511	11347

GREATER BOSTON	1960 POPULATION	RESIDENTIAL			COMMERCIAL		MANUFACTURING & WHOLESALING		PUBLIC UTILITIES			
The 153 Cities and Towns in Greater Boston		Single Family	Multi Family	Under Construction	Retail - Services	Open Amusement	Industrial - Warehouse	Extractive	Transportation	Sewage Disposal	Refuse Disposal	Water Shed Reservation
		1a	1b	1c	2a	2b	3a	3b	4a	4b	4c	4d
Merrimac	3261	446	...	...	20	...	8	...	...	...	...	150
Methuen	28114	2794	210	...	95	10	75	70	90	...	...	38
Middleborough	11065	2124	34	...	166	14	40	28	...	...	...	22
Middleton	3718	916	...	...	25	...	35	70	...	20	...	...
Milford	15749	936	386	...	76	...	26	...	...	...	...	...
Millis	4374	575	...	...	39	...	72	16	...	4	...	...
Newbury	2519	704	...	...	36	16	...	...	...	...	...	...
Newburyport	14004	862	196	...	64	...	44	12	34	...	...	...
Norfolk	3471	625	...	...	10	...	20	...	...	12	...	...
N. Andover	10908	1583	100	...	30	32	173	...	432	...	20	...
N. Attleborough	14777	1472	178	...	78	...	66	130	38	...	...	...
Northborough	6687	988	...	...	46	...	14	...	...	...	...	120
N. Reading	8331	2735	...	...	85	...	50	...	...	...	...	...
Norton	6818	778	...	...	70	...	26	...	...	...	...	64
Norwell	5207	1280	...	...	32	...	4	...	...	...	...	...
Pembroke	4919	2205	...	...	60	...	10	...	...	...	...	...
Plainville	3810	580	...	...	52	...	16	20	...	...	...	...
Plympton	821	344	...	...	14	...	...	...	...	...	...	...
Raynham	4150	552	...	...	40	70	12	54	...	...	...	...
Rockland	13119	1126	...	...	50	...	30	...	...	...	...	...
Rockport	4616	1238	...	...	88	...	8	14	...	...	...	518
Rowley	2783	812	...	...	40	...	2	...	...	...	...	...
Salisbury	3154	556	...	...	82	154	16	...	...	...	...	...
Scituate	11214	2343	5	...	95	...	25	110	...	...	...	...
Sharon	10070	2188	25	...	30	...	13	35	...	...	12	182
Sherborn	1806	550	10	20	20	...	...	...	...	...	...	15
Southborough	3996	700	...	...	41	...	49	...	...	...	...	1188
Stoughton	16328	2208	27	...	100	...	142	46	84	...	...	...
Stow	2573	1264	8	...	12	...	2	...	...	...	...	...
Sudbury	7447	1267	...	90	15	...	55	...	...	...	...	...
Taunton	41132	2055	1190	...	142	...	200	...	112	...	...	...
Tewksbury	15902	2190	...	...	60	...	65	...	136	20	...	196
Topsfield	3351	1023	...	...	23	...	35	...	...	...	...	36
Tyngsborough	3302	818	...	...	54	20	14	24	16	...	...	...
Upton	3127	490	14	...	28	...	18	...	...	...	...	...
Walpole	14068	2244	10	...	35	...	80	36	...	...	...	...
Wayland	10444	2270	...	...	70	...	60	...	...	...	...	...
Wenham	2798	573	...	...	4	...	...	...	35	...	...	116
Westborough	9599	614	62	...	74	16	54	...	50	...	44	412
W. Bridgewater	5061	815	...	...	30	...	...	...	...	...	...	10
Westford	6261	1560	...	...	10	...	44	251	...	...	...	...
W. Newbury	1844	498	...	...	16	14	2	...	...	...	...	234
Whitman	10485	1109	3	...	26	...	26	...	...	...	...	...
Wilmington	12475	2290	5	...	20	...	145	165	...	...	...	...
Wrentham	6685	1377	2	...	57	...	8	...	...	...	...	...
OUTER CITIES	282199	10622	3720	...	779	16	1222	105	386	213	98	503
Brockton	72813	3829	1125	...	212	16	205	75	221	213	98	228
Haverhill	46346	2820	586	...	146	...	150	30	80	...	...	275
Lawrence	70933	1186	989	...	196	...	517	...	85	...	...	...
Lowell	92107	2787	1020	...	225	...	350	...	...	...	...	...
GREATER BOSTON	3467543	236215	32819	1266	14078	1240	16225	2448	8664	551	526	9153

INSTITUTION-GOV'T			RECREATION							LAND MANAGEMENT		VACANT & RURAL			TOTAL LAND
Small Holdings	With Large Grounds	Cemeteries	Neighborhood Facilities	Community Facilities	Regional Facilities	Semi-Public Regional	Other Regional	Golf and Other Clubs	Public Golf Courses	Forest-Wildlife	Undeveloped Town Land	Suitable	Under Development	Total	
5a	5b	5c	6a	6b	6c	6d	6e	6f	6g	7a	7b	8a	8b	8c	9
6	...	24	...	216	...	...	...	...	...	...	...	3938	...	4672	5542
15	179	148	49	226	...	...	...	...	126	...	...	8482	...	10217	14342
52	...	66	8	...	...	...	82	54	...	...	...	32971	...	42097	44787
20	416	40	5	203	...	...	...	...	...	...	36	4349	...	7243	9029
36	...	96	2	...	...	...	...	...	...	...	...	6045	...	7914	9472
18	...	22	32	...	...	...	...	...	...	...	...	4487	...	7011	7789
8	322	6	...	...	...	...	...	216	...	3270	...	6785	...	10763	15341
60	...	102	14	56	...	...	...	...	...	56	...	3310	...	3812	5312
...	1276	6	...	...	...	...	...	...	...	...	...	5528	...	7715	9664
28	626	85	72	154	1898	202	...	...	...	82	...	8542	...	11526	17043
20	...	28	...	30	...	...	...	...	...	334	92	8938	...	9726	12192
16	530	20	12	38	...	...	...	...	234	...	...	7819	...	9963	11981
6	78	30	60	141	...	...	...	132	...	216	...	2810	...	4792	8325
14	306	8	24	...	...	58	...	344	...	...	...	13662	...	16170	17862
20	546	30	25	506	...	...	...	...	...	...	...	7680	...	10866	13309
35	188	12	15	235	...	...	...	...	...	...	...	7475	...	10800	13560
10	132	16	14	...	...	...	...	...	...	...	48	5445	35	6139	7027
10	...	10	6	...	...	...	...	...	...	...	...	6667	...	9165	9549
...	12	68	...	...	...	...	...	...	...	...	...	10200	...	12184	12992
22	398	54	38	12	...	...	...	...	...	...	...	3240	...	4696	6426
32	...	18	32	124	...	62	...	156	...	...	...	1922	...	2220	4510
16	...	12	24	...	...	...	...	...	...	1226	...	7570	...	10034	12166
14	...	...	...	...	344	...	...	...	...	...	...	6316	...	8908	10074
15	122	24	42	271	...	...	...	165	...	...	14	5136	...	7458	10689
9	100	254	80	282	...	...	402	398	...	...	...	8309	...	11069	15079
8	60	24	46	603	...	53	...	...	...	...	...	6931	...	9401	10810
7	207	16	2	41	...	...	...	...	...	...	...	5623	...	6568	8819
26	...	52	30	530	...	...	...	10	...	...	...	5625	...	7145	10400
12	1144	16	...	90	...	...	...	56	...	...	...	6117	...	8328	10932
5	786	20	5	...	...	...	163	...	...	392	...	9233	120	12820	15618
88	1406	162	50	126	...	...	...	...	174	...	...	20437	...	24561	30266
5	930	145	45	...	...	...	...	...	...	...	...	6572	...	9456	13248
10	...	22	20	75	238	...	508	...	...	280	...	4018	...	5922	8192
6	280	8	...	...	204	...	...	294	...	48	...	8182	...	9004	10790
10	...	32	10	...	2262	...	...	...	...	...	...	9906	...	10992	13856
25	560	16	34	456	...	...	...	153	...	...	78	6990	...	9424	13151
35	79	32	135	370	80	...	295	...	284	...	...	4007	...	6055	9765
6	400	10	4	77	...	...	788	...	96	...	...	1789	...	2851	4960
12	1269	30	6	...	18	...	...	...	...	...	...	8430	...	10811	13472
10	...	25	20	...	...	...	...	...	...	518	...	6555	...	8486	9914
15	...	20	35	585	...	...	...	...	...	...	70	13143	...	16925	19515
18	376	22	20	20	...	...	...	...	...	450	36	6118	...	7190	8896
9	...	25	16	32	...	...	...	...	...	...	...	2246	...	3016	4262
10	...	65	30	20	...	...	...	...	...	...	...	4708	...	8040	10790
14	578	10	16	...	...	...	...	18	...	1300	...	8010	...	10715	14095
516	371	857	279	1551	296	...	...	268	300	...	78	19952	398	25230	47410
81	213	202	116	634	...	...	...	68	234	...	...	5075	398	5715	13485
84	74	278	38	180	...	...	...	200	...	...	78	11819	...	16171	21190
230	...	145	71	390	...	...	...	...	...	...	...	350	...	500	4309
121	84	232	54	347	296	...	...	...	66	...	...	2708	...	2844	8426
7344	42437	10508	6363	18572	23994	3124	5873	9213	3278	17412	4498	822259	3584	1079155	1554956

APPENDIX B. A COMPARISON OF LAND USE IN SELECTED METROPOLITAN AREAS

It is difficult to compare land use among different metropolitan areas for two reasons. First, metropolitan areas may not be defined in precisely the same way, and second, land use categories may also vary in their definition. Nevertheless, land use information is becoming increasingly available for metropolitan areas, and the following data is presented with the caution that it must be interpreted with due regard to the qualifications noted.

TABLE XV. THE PER CENT DISTRIBUTION OF THE DEVELOPED LAND IN EIGHT METROPOLITAN AREAS

Metropolitan Areas*	Resid.	Comm.	Mfg.	Rec. & Open	Inst/ Govt.	Util.	% Devel**	Year	Pop. (Mill)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Boston	59.6	3.4	4.1	15.5	13.3	4.2	29.2	1960	3.47
Baltimore	59.4	3.6	4.8	----30.0---		2.2	28.8	1960	1.67
Chicago	45.4	5.6	6.2	24.8	5.3	12.7	45.6	1959	5.17
Detroit	64.8	5.0	8.8	9.2	---12.2--		30.2	1958	3.89
Hartford	65.3	5.7	7.6	11.1	7.4	2.7	20.3	1960	0.50
Miami	65.3	8.5	3.9	6.2	5.3	10.8	30.4	1960	0.88
Toronto	59.9	3.5	11.7	9.9	3.7	11.3	55.9	1959	1.62
Twin Cities	59.2	3.4	17.8	------19.6------			28.0	1958	1.46

* Metropolitan areas as defined by regional planning agencies.

** Per cent of total land developed.

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